

FY-2004-2005 PROPOSED SCOPE OF WORK for:
Hydrology Support for Biological Research

Project #:19B

Lead Agency: U. S. Fish and Wildlife Service

Submitted by: George Smith
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Category:

- ☐ Ongoing project
- ☒ Ongoing-revised project
- ☐ Requested new project
- ☐ Unsolicited proposal

Expected Funding Source:

- ☒ Annual funds
- ☐ Capital funds
- ☐ Other (explain)

I. Title of Proposal: Hydrology Support for Biological Research

II. Relationship to RIPRAP:

Green River Action Plan: Mainstem

I.A.3.a Operate Flaming Gorge pursuant to biological opinion

Green River Action Plan: White River

I.A.2 Identify year-round flows needed for recovery

Green River Action Plan: Yampa and Little Snake Rivers

I.C.2 Identify year-round flows needed for recovery

Colorado River Action Plan Gunnison River

I.A.2 Identify year-round flows needed for recovery

Green River Action Plan Duchesne River

I.D.1 Determine feasibility and benefits of coordinated reservoir operations

III. Study Background/Rationale and Hypothesis:

This proposal represents a completion of Division of Water Resources activities that support ongoing research and monitoring activities. Activities are, for the most part, broken down by specific task with task descriptions, budgets, and deliverables.

IV. Study Goals, Objectives, and End Products:

To provide hydrology and temperature data to researchers and principal investigators, and to support the objectives of the Recovery Implementation Program (Recovery Program).

V. Study Area:

Colorado and Green River Basins.

VI. Study Methods/Approach:

The Division of Water Resources works as a service Bureau to the Recovery Program, providing hydrological and temperature information to program researchers. In addition to this work, there are a number of specific tasks (described below) that are undertaken in support of operational and research activities/venues of the Recovery Program.

VII. Task Description and Schedule:

A. Temperature Data Collection and Analysis:

In coordination with the CRFP offices in Grand Junction and Vernal, water temperature data will be gathered systematically to support the water temperature model and other research projects. Thermographs will be installed at four locations on the Gunnison River, five locations on the Colorado River, and eight locations on the Green River. The thermographs will be checked periodically and calibrated with on-site temperature readings. Temperature data collection on the Colorado River by CRFP was consolidated in this Scope of Work beginning in FY- 99.

The temperature data, together with climatic, hydrologic, and stream geometry data, will be used to support ongoing research and future stream network temperature model. An annual report will be prepared and presented at the annual research meeting and made available on the Internet. The temperature data along with the channel monitoring and sediment monitoring data will added to the Recovery Program Physical Data Repository.

One of the recommendations of the report "Recommendations for Endangered Fish in the Green River Downstream of Flaming Gorge Dam" is that temperatures in the

Green River be maintained within levels which are advantageous to endangered fish. The report targets water temperatures of 18° C or greater for 2 to 5 weeks in upper Lodore Canyon beginning at the onset of base flows. The report recommends that the temperature of the Green River be no more than 5° C older than the Yampa River at the confluence during the summer base-flow period to prevent cold shock to drifting Colorado pikeminnow larvae.

To achieve these recommendations, water released from Flaming Gorge will need to be managed and monitored closely at the dam and at various points along the Green and Yampa Rivers. This monitoring requirement has been recognized by the Upper Colorado River Endangered Fish Recovery Program. The FWS Division of Water Resources has been asked to establish a network of water temperature monitors which can be accessed on a near real-time basis. The monitors will be located at remote locations in Dinosaur National Monument and will require some type of special use or data collection permit. Temperature monitors would be located on the Green and Yampa rivers at the following locations

1. Lodore Boat Launch
2. Upstream of the Yampa confluence River left 1/4 mile
3. Below the Confluence of the Yampa River, river left in Mitten Park.
4. Yampa River 1/4 mile upstream confluence on River left.

B. Hydrology Support for Colorado River Biological Opinions:

The Water Resources Division will help in the coordination of releases from Flaming Gorge and the Aspinall Unit for endangered fish. Releases will be monitored and researchers and administrators will be notified of important changes in planned release patterns. The Water Resources Division will also be scheduling and monitoring releases from Ruedi and Wolford Mountain Reservoir for flow augmentation in the 15-Mile Reach.

Work will support activities of the Yampa River Management Plan and Programmatic Biological Opinion.

Work will support activities of the Gunnison River Management Plan and Programmatic Biological Opinion

C. Hydrology Support for Other Scopes of Work:

The Division of Water Resources will continue to participate in finding solutions to issues relating to flow and channel capacity in the Fryingpan and Roaring Fork Rivers.

The Division of Water Resources will continue to work with Mike Carpenter of USGS

to support SOW #85d. The work will include providing technical and installation support for the deployment of sediment load sensors on the Green and Yampa Rivers. Mike Carpenter of the USGS will provide training on how to set up the equipment and download data. When the training is complete Division of Water Resources staff will be able to download the data and do the data analysis. The project is described in detail in a separate scope of work.

Study Schedule:

Work will be scheduled to match dates outlined in the RIPRAP and individual research schedules. Because most of the work is in response to other research objectives, a detailed schedule is not possible.

VIII. FY-2004 Work Deliverables Due Dates:

Due to the diverse components of the effort, there are limited defined deliverables. Most of the work is in support of other efforts that have specific products. Deliverables that are direct products of the effort include:

- A. A database of temperature data is assembled each year for each thermograph that is maintained by the Division of Water Resources. The data will also be made available on the Recovery Programs riverdata web page at <http://www.r6.fws.gov/riverdata/> Real time river temperature data from the Green and Yampa Rivers in Dinosaur National Monument will be made available online or by cell phone.
- B. Each year a report is generated documenting the releases from Ruedi and the Wolford Mountain reservoirs that describes release volumes, stages at various locations, and any observed benefits that the Biological Opinion releases have on endangered fish habitat.
- C. A report will be prepared that contains the hydrological data developed in support of flow recommendation development. This report will also include information on river stage and the contribution of the Yampa, White, and Duchesne Rivers to the water stage in Green River.

IX. FY- 2004 Budget

Task Breakout

A. Temperature Data Collection	\$44,628
B. Hydrology Support for BO's	11,857
C. Hydrology Support for Other Scopes	<u>16,515</u>
Total:	\$73,000

Task A

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2075	3.0	6,225
Computer assistant	1855	6.5	12,058
technician	960	3.5	3,360
Clerical & Accounting	710	2.5	1,775
Travel			3,000
Equipment			8,000
Supplies			210
Other (GJ CRFP temperature work budget break out below)			10,000
Task Subtotal			44,628

Task B

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2,075	4.5	9,337
Clerical & Accounting	710	2	1,420
Travel			900
Equipment			200
Task Subtotal			11,857

Task C

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2,075	6.0	12,450
Clerical & Accounting	710	3.5	2,485
Travel			1,000
Equipment			280
Supplies			300
Task Subtotal			16,515
Total:			73,000

FY-2004 Grand Junction CRFP
Temperature Work

Cost Category	Cost/W	Weeks.	Total
Project Leader	1,880	.5	940
Administrative Officer	1,225	.5	613
Biologist	1,620	3	4,860

Bio Technician	820	3	2,460
Travel			527
Equipment			300
Supplies			300
Total			10,000

IX. FY- 2005 Budget

Task Breakout

A. Temperature Data Collection	\$43,940
B. Hydrology Support for BO's	13,264
C. Hydrology Support for Other Scopes	<u>19,296</u>
Total:	\$76,500

Task A

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2,160	2.0	4,320
Computer Assistant	1,930	6.5	12,545
Technician	1,000	3.5	3,500
Clerical & Accounting	740	2.5	1,850
Travel			3,000
Equipment			8,000
Supplies			225
Other (GJ CRFP temperature work budget break out below)			10,500
Task Subtotal			43,940

Task B

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2,160	4.9	10,584
Clerical & Accounting	740	1.0	1,480
Travel			1,000
Equipment			200
Task Subtotal			13,264

Task C

Cost Category	Cost/Wk.	Weeks.	Total
Principal Investigator	2,160	4.9	15,120
Clerical & Accounting	740	2.0	2,590
Travel			1,000
Equipment			200
Supplies			386
Task Subtotal			19,296
Total:			76,500

FY-2005 Grand Junction CRFP

Temperature Work

Cost Category	Cost/W	Weeks.	Total
Project Leader	1,974	.5	987
Administrative Officer	1,287	.5	644
Biologist	1,701	3	5,103
Bio Technician	861	3	2,583
Travel			583
Equipment			300
Supplies			300
Other			0
Total			10,500

IX. Budget Summary:

FY- 2004	\$ 73,000
FY- 2005	\$ 76,500

X. Reviewers: Mike Carpenter USGS, Angela Kantola

APPENDIX A

THERMOGRAPH LOCATIONS

<u>Yampa River</u>	<u>River Mile</u>
Craig	128
Milk Creek Dirt Road	119
Juniper Springs Bridge	92.8
Yampa Green Confluence	0.5
 <u>Green River</u>	 <u>River Mile</u>
Browns Park Refuge	367
Mitten Park	343
Jensen	301
Ouray Refuge	258

Green River (Discontinued 1993) 120

Gunnison River River Mile

Below Crystal Reservoir 100

Below Confluence with North Fork 71.6

North Fork above Conf. with Gunnison .1

Uncompahgre above Conf. With Gunnison 1.5

Johnson Boys Ranch 42

Redlands Fish Ladder 2

Colorado River Maintained by Grand Junction Colorado River Fisheries Office

River Mile

Rulison Bridge 230

Palisade 35 Rd. 182

Walker Wildlife Area 164

Cisco above Delores 98

Gold Bar near Moab 54